Kids Code!
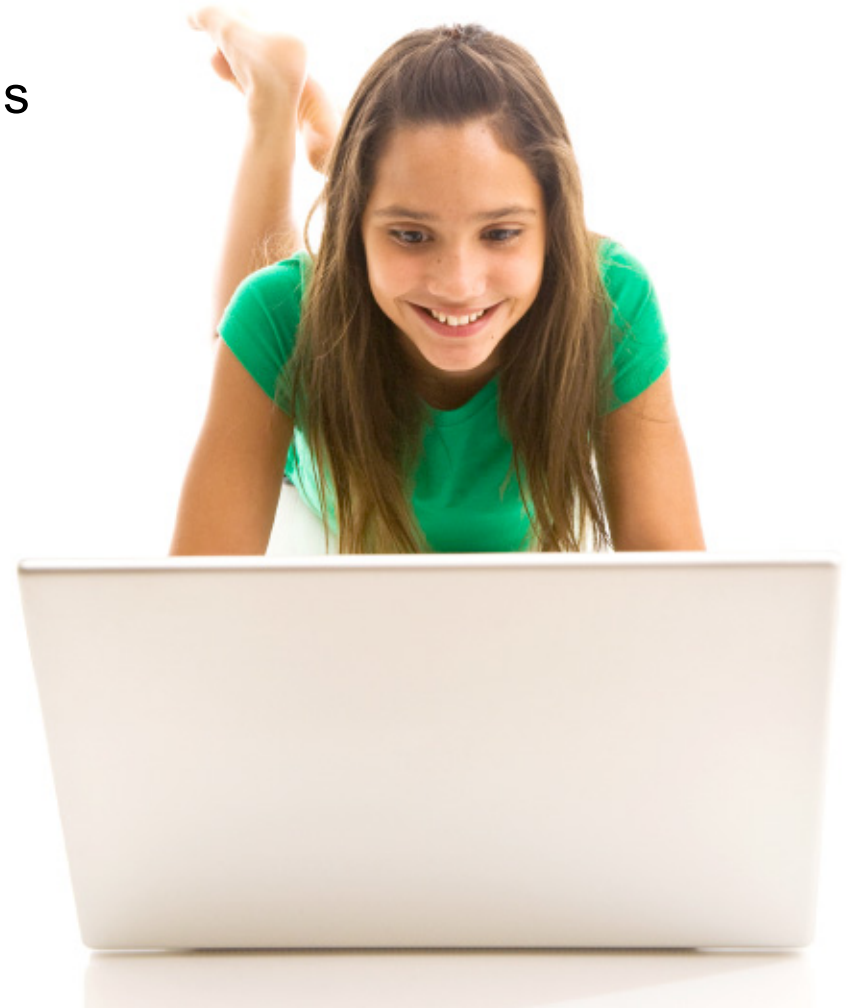
Introducing Development Concepts Using the IBM Bluemix Platform

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Agenda

- Overview
- What is IBM Bluemix™ and Node.js
- Hands on activity (60 minutes)
- Extended activities
- Introduction to CoderDojo
- Resources

Overview

- Today, you'll program your own website using a cloud-based development – or programming – platform called IBM Bluemix.

- This platform can be used for coding websites, creating apps for smartphones or tablets, or writing programs that a business might use.

- You'll also learn about the CoderDojo, a place where you can meet other people interested in computers and coding, and learn development skills together.

What is IBM Bluemix?

- Bluemix is an open-standards, cloud-based platform for building, managing, and running apps of all types.

- You can use IBM Bluemix to build, manage, and run apps for web, mobile (such as tablets or phones), and smart devices (like a fitbit).

- Bluemix lives in the cloud. It is based on the Cloud Foundry open source platform as a service (PaaS), and enables organizations and developers to quickly and easily create, deploy, and manage applications in the cloud.

- URL: **https://ibm.biz/bluemix4kids/**

What is Node.js?

- Node.js is a platform built on Chrome's JavaScript runtime for easily building fast network applications that a developer can easily "grow" to handle more users or more machine traffic.

- Node.js uses an event-driven, non-blocking I/O model that makes it lightweight and efficient, perfect for data-intensive real-time applications that run across distributed devices.

- What does this mean in English? It means Node.js programs respond when either users or sensors interact with them – and the programs respond quickly no matter what type of device is requesting information.

- URL: **http://nodejs.org/**

# Build a website using the Bluemix platform

- Today, you will create a website on the IBM Bluemix platform and publish it.

- The application includes a framework for publishing HTML web pages.

- Web browsers can make requests to the Node.js website at the IBM Bluemix URL your server is brought up on.

- In the web browser, an HTML-formatted page is displayed with a title and counter.

- Students will make changes to a website and edit the application to pass and display a new counter.

Build a website using the Bluemix platform

Web browsers
(from anyone, anywhere)
1. Enter URL
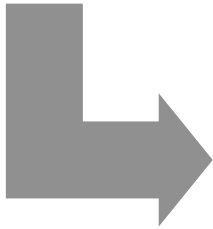
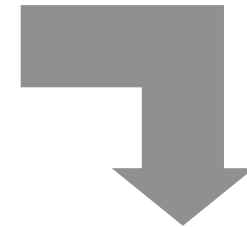**Node.js server on the Internet**
(running on IBM Bluemix)
2. Node.js server processes request

Node.js plus Express Server

Express framework
- App.get ('/') accepts all requests from browsers
- Renders (index.ejs) to display HTML home page
- Passes counters from server to HTML

Counter resets to 0 when server stopped

3. Render Index.ejs

HTML source

Formatted HTML

Activity – Application Concept

- The server uses the Express Framework code to accept the requests, increment and pass an internal counter, and display the Index HTML page in the browser.

- You will make some changes to the code in the DevOps Services Integrated Development Environment, and deploy the new version of the application back to Bluemix.

- The code you write is JavaScript. You will use the Kids Code! Cards and follow the steps necessary for adding another counter.

- You will also modify the HTML pages in order to link static HTML pages, upload pictures, and do other HTML formatting to your site.

Activity – Step 1

- The first activity consists of modifying the HTML of a node.js application.

- Get started by looking at **Kids Code! Card 1.**

- If you are using Windows, ensure that file extensions are visible in Windows Explorer on your computer.

- You will begin by modifying the Index page to have your own title.

- Once you have followed the steps on Kids Code! Card 1, you can deploy your page and see the changes live on the Internet.

Activity – Step 2

- The second activity consists of editing node.js applications.

- Start by looking at **Kids Code! Card 2.**

- Follow the steps on Card 2 to modify the app.js code to add another counter and pass it to the HTML.

- Modify the index page to display the new counter.

- Deploy your changes and see the changes live on the Internet.

Activity – Step 3

- The third activity consists of adding linked web pages to your site.

- Begin by looking at the **Kids Code! Card 3.**

- Follow the steps on Card 3 to add the linked web pages to your site.

- Deploy your changes and see the changes live on the Internet.

- If you have more advanced students coding skills, you can personalize your page beyond the given example or choose to further modify the app.js javascript code.

Extended exercises

- NodeJS_Simple_3 – Adding database capabilities

  - https://hub.jazz.net/project/rewillen/NodeJS_Simple_3/overview

  - Adds a database service to the application to store the counter

  - Students see the difference between the life cycle of the node.js server and a persistent database storage service

- CoderDojo My First Website

  - http://kata.coderdojo.com/wiki/My_First_Website

  - Great introduction exercises for HTML and CSS

CoderDojo

- CoderDojo is an open source, volunteer-led network of free computer programming clubs for young people aged 7-17.

- CoderDojo puts an emphasis on self-motivated learning through project work, peer-to-peer mentoring and the creation of socially innovative projects.

- IBMers have done many things to support CoderDojo already, and right now we are collaborating internationally to make Bluemix the ultimate playground for young engineers.

- To learn more or become a volunteer, check the CoderDojo community
    - **http://coderdojo.com**
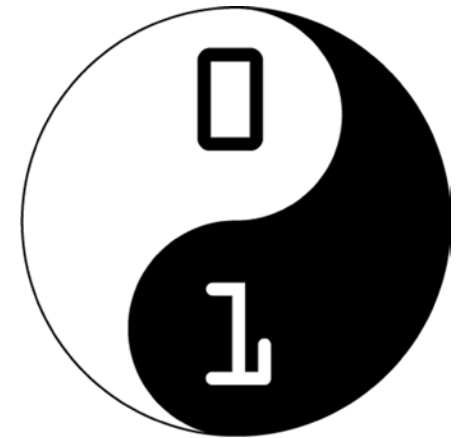
Resources

- Learn more about IBM Bluemix and sign up
  - **ibm.biz/bluemix4kids**
- Bluemix sushi cards: Node.js, java, mobile, python, IoT, and more!
  - **ibm.biz/bluemix4dojo**
- Bluemix Activity Kit
  - **ibm.biz/bluemix4ODC**
- Learn more about CoderDojo
  - **http://coderdojo.com**
- developerWorks article: Build your first Node.js website
  - **ibm.com/developerworks/library/wa-simplenode1-app/index.html**
- Video tutorial for coding with Bluemix
  - **http://youtu.be/owCspJjkrQs**

on demand :::community

Launched in 2003, IBM's community service initiative supported 16 million hours of volunteer work by nearly 250,000 volunteers in its first decade worldwide. It's an innovative approach to corporate philanthropy, but at its heart is IBM's traditional belief that we all can, and should, share what we know to make a difference in our communities.

Kids Code!